Explanation of Significant Differences

Ormet Corporation Superfund Site

I. Introduction

A. Site Name and Location

The Ormet Corp. Superfund Site (Site) comprises part of the northeast portion of the Ormet Primary Aluminum Corporation (Ormet) reduction plant property located in Monroe County, Ohio, approximately 3 miles north of the city of Hannibal in the southeastern part of the state. See maps of the plant and the site in Figures 1 and 2. (Figure 1 shows the Site, which is the group of ponds and other designated pieces in the area of Pond 5. The plant property is the land extending from the line by the Ormet Corporation building to the northeast. Figure 2 identifies the monitoring wells and other wells on the Site and the plant area.) The Ormet reduction plant facility is located along the Ohio River at approximately river mile 123, about 35 miles south of Wheeling, West Virginia. The facility is bounded on the northwest by Ohio State Route 7 and on the east and southeast by the Ohio River. The Ormet reduction plant began operations in 1958; since then, the main process has been the reduction of alumina to produce aluminum metal. Plant wastes were historically disposed of on the ground or in unlined lagoons in the northeast portion of the facility. This portion of the facility (approximately 47 acres) was placed on the National Priorities List on July 21, 1987. Located immediately to the west of the reduction plant facility is other industrial property. This property was the location of the former Consolidated Aluminum Corporation (CAC) rolling mill, which was later owned and operated by the Ormet Aluminum Mill Products Corp. The rolling mill shut down in 2005 and the property was sold in 2007. A steel fabrication facility currently operates on the former rolling mill property.

B. Lead and Support Agencies

The U.S. Environmental Protection Agency (U.S. EPA) is the lead agency for the implementation of the remedial action. The Ohio Environmental Protection Agency (Ohio EPA) is the support agency.

C. Statement of Purpose and Statutory Basis

This decision document sets forth the basis for the determination to issue an Explanation of Significant Differences (ESD) to the Record of Decision (ROD) that was signed September 12, 1994, and the ESD that was issued April 1, 1997 for the Ormet Corp. Superfund Site. Section 117(c) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and 40 CFR §300.435(c)(2)(i) of the National Oil and Hazardous Substances Contingency Plan (NCP) establish procedures for explaining, documenting, and informing the public of significant changes to the remedy that occur after the ROD is signed. An ESD is required when the modifications to be implemented significantly change but do not fundamentally alter the remedy selected in the ROD with respect to scope, performance or cost. This ESD documents a change in the remedial action selected in the ROD to address groundwater contamination at the Site. This ESD provides for discontinuing operation of two "interceptor wells" used for the extraction and treatment of a portion of the groundwater plume under the Site. Operation of the remedy has shown that the interceptor wells are not necessary because the other, larger well, which is also extracting groundwater, is successfully achieving the remedial objective of capturing and containing the groundwater plume.

D. Summary of Circumstances Resulting In Issuance of this ESD

In July, 2009, Ormet submitted to U.S. EPA a request to modify the groundwater remedy selected in the 1994 ROD to allow the shutdown of the interceptor wells and the associated treatment system. Ormet contended that the continued operation of this system is no longer necessary to achieve the remedial action goals for the site, and therefore, at an annual operating cost of approximately $200,000, its continued operation is not cost effective. The interceptor wells also are no longer needed for their original purpose, which was to extract contaminated groundwater that was contributing to a problem with scaling on surfaces in the process water system. The 1994 ROD stated that the remedial action objective for groundwater at the Site was to restore the aquifer to drinking water quality. At that time the neighboring CAC facility pumped groundwater for use as drinking water for both CAC and Ormet employees. The risk assessment performed during the remedial investigation identified the potential for contaminated groundwater emanating from the former disposal areas on the Site to reach the CAC drinking water well and result in an unacceptable risk to potential human receptors. Therefore, the 1994 ROD prescribed that the plume of contaminated groundwater from the Site must be hydraulically contained within the Ormet reduction plant facility property to prevent the contaminants from migrating in the subsurface to the Ohio River or to the adjacent rolling mill property. Hydraulic containment was to be achieved by continuous pumping of the existing high-capacity Ranney well, used by Ormet to pump water for non-contact cooling, in conjunction with operation of the existing interceptor well extraction system (both located on the Ormet reduction plant property). The interceptor well system was put in place by Ormet to keep some of the groundwater contamination from the Ranney well because dissolved silica caused incrustation of well intakes and heat-exchange equipment. The ROD stated that the Ranney well, hereinafter referred to as the reduction plant production well, and interceptor well pumping should continue until groundwater throughout the plume met the cleanup standards specified therein. The cleanup standards were established at levels sufficient to restore the groundwater to drinking water quality.

U.S. EPA examined groundwater monitoring data collected over the past several years and data submitted by Ormet in support of its 2009 shut down request to evaluate the request. The data indicate that if the interceptor wells are not pumped, the pumping of the reduction plant production well alone (at historic pumping rates) achieves the required capture zone. In addition, the data show that the extraction of the small amount of contaminated groundwater achieved by the interceptor wells is not contributing significantly to the cleanup of the groundwater plume. The reduction plant production well, withdrawing process water which is then discharged to the Ohio River, is achieving the cleanup of the groundwater. According to U.S. EPA's evaluations, the groundwater remediation timeframe will not be significantly impacted by the cessation of operation of the interceptor well. Based on the information available, U.S. EPA is modifying the groundwater remedy to allow for discontinuing operation of the interceptor wells and associated treatment system. This modification does not include any change in the monitoring requirements for the remedy.

E. Administrative Record

This ESD and supporting documentation will become part of the administrative record file for the site, as noted in the NCP at 40 CFR §300.825(a)(2). The site administrative record file and site repositories may be found at:

Monroe County Public Library
96 Home Ave.
Woodsfield, Ohio
740-472-1954

U.S. EPA
Region 5 Records Center, 7th Floor
77 W. Jackson Blvd.
Chicago, IL 60604.
8 a.m.-4 p.m. M-F

II. Site History, Contamination, and Selected Remedy

A. Site History

Ormet Corporation and its then wholly owned subsidiary, Ormet Primary Aluminum Corporation, have owned and operated the reduction plant facility since 1958. The main process at the facility has been the reduction of alumina to produce aluminum metal. The plant is currently operating. Plant wastes were historically disposed of on the ground or in unlined lagoons in the northeast portion of the facility.

From 1958 to 1968, spent potliner, a hazardous by-product of the aluminum production, was placed in an unlined open area in the northeast part of the property, which is referred to as the former spent potliner storage area (FSPSA). From 1968 to 1981, much of the potliner waste was removed and transported to an on-site recovery plant that removed a useable material called cryolite from the potliner. Since 1980, the remaining potliner material has been transported off site for disposal.

At various times from 1958 to 1981, five disposal ponds were used. These former disposal ponds (FDPs) were unlined and constructed of natural materials. Primarily, FDP-1 through FDP-4 were used for the disposal of process wastes from the air emissions wet scrubbing system in the form of a sludge, the primary constituents of which were alumina, particle carbon, and calcium-based salts. A waste slurry from the cryolite recovery plant was routed to FDP-5; FDP-1 through FDP-4 may have received minor amounts of cryolite plant waste. These tailings were alkaline and consisted primarily of carbonaceous material from the potliner along with sodium and calcium-based salts.

From about 1966 until mid 1979, Ormet deposited waste construction materials and other miscellaneous plant debris in the southeastern corner of the Ormet property, adjacent to FDP-5. This 4 to 5 acre area is designated the construction materials scrap dump (CMSD). A small stream on the western portion of the property conveys process water and stormwater runoff along the southwestern edge of the disposal areas to a small backwater of the Ohio River. The source of this stream is a permitted outfall (Outfall 004). This backwater created a sink for contamination.

An area referred to as the carbon runoff and deposition area (CRDA) contained carbon deposits, probably carried there by storm water runoff from the Ormet plant area. Some of the carbon runoff may also have entered the Outfall 004 stream and backwater area.

The alluvial aquifer beneath the surface of the reduction plant and rolling mill properties was a source of both process and drinking water for the reduction plant and the rolling mill. Prior to 2005, two high capacity Ranney wells, one on the reduction plant's property and the other on the rolling mill's property, pumped close to 4 million gallons per day. Water from the Ranney well on the rolling mill's property, hereinafter referred to as the rolling mill production well, was used for drinking water by both plants. The reduction plant production well was, and continues to be, used to provide non-contact cooling water. This well is located near the southern boundary of the facility, abutting the Ohio River. Pumping of this large well draws in a significant amount of river water as well as groundwater. In the latter part of 2008, this well was producing around 1 million gallons per day. Since the shutdown of the rolling mill, its production well, which was not part of the remedy, has not been operated, and it has now been abandoned. The reduction plant now obtains its drinking water from an outside water supply. Similarly,

the operators of the facility at the former CAC rolling mill get their drinking water from an outside water supply.

In 1972, a hydrogeologic study conducted by Ormet verified the presence of groundwater contamination in the reduction plant production well pumping center. As a result of this study, the two interceptor wells (#1 and #2) were installed about 100 feet north of the reduction plant production well to remove a portion of the plume before it reached the pumping center. Ormet installed these wells because of the effect of contamination on its reduction plant operations. The groundwater plume extended about 3,000 feet southwest from the waste disposal areas on the facility until it reached the interceptor wells. The interceptor wells can capture up to 300,000 gallons per day.

The contamination at the reduction plant source areas, combined with its potential impact on downgradient drinking water supplies, prompted U.S. EPA to propose that the Site be placed on the National Priorities List (NPL) in September 1985. U.S. EPA finalized the listing on July 21, 1987.

In May 1987, the U.S. EPA, Ohio Environmental Protection Agency (Ohio EPA), and Ormet Corporation entered into an Administrative Order by Consent (Consent Order) providing for Ormet to conduct a remedial investigation (RI) and feasibility study (FS) under the oversight of U.S. EPA and Ohio EPA. The remedial investigation report was completed in December 1992 and the feasibility study report was completed in December 1993. The next section discusses the findings of the RI regarding the former waste disposal areas and the impacts and/or potential impacts of these areas as sources of contamination to groundwater and surface water (the Ohio River).

B. Contaminants Identified During Remedial Investigation

1. Former Spent Potliner Storage Area (FSPSA)

Moderate levels of cyanide and fluoride, both mobile in groundwater, were identified in the FSPSA. Soils in this area were identified as the primary ongoing contributor of cyanide and fluoride contamination to groundwater.

2. Former Disposal Ponds (FDPs)

Cyanide, fluoride, chromium, arsenic, and polynuclear aromatic hydrocarbons (PAHs) were found in solids from the FDPs. The contaminants did not appear to be migrating to any significant degree, either to groundwater or air, except that fluoride was present in groundwater downgradient from FDP-5. The 1972 groundwater investigation had identified high levels of fluoride in groundwater downgradient of FDP-5; however, by the time the remedial investigation was conducted, between 1988 and 1992, fluoride concentrations downgradient of FDP-5 had significantly decreased, due to the pumping of the reduction plant production well and interceptor wells. The RI determined that the contaminant levels at the FDPs were at acceptable levels assuming a future industrial use. The ROD therefore did not require active remediation of the FDPs, and relied on site-wide future groundwater monitoring to verify whether the downward trend of fluoride concentrations downgradient of FDP-5 was continuing.

3. Construction Materials Scrap Dump (CMSD)

The CMSD was found to be a significant source of cyanide and PCBs in seeps, backwater sediments, and river water. The RI concluded that the CMSD did not contribute to groundwater contamination. PAHs were found at levels that contributed to an increased ecological risk but were not believed to be migrating out of the source area.

4. Carbon Runoff and Deposition Area (CRDA)

The CRDA is underlain by moderate to low-permeability soils. A single composite sample from the CRDA showed polychlorinated biphenyls (PCBs) at 56 mg/kg. The CRDA was thought to be a probable source of PCBs and PAHs to the backwater and river bank, transported by storm water runoff. Arsenic was also detected as high as 83 mg/kg in soils at the CRDA.

5. Ohio River and Backwater Area Sediments

These sediments contained PCBs at nearly 100 ppm and total PAHs of over 1100 ppm. Although industrial activity upstream from the Site contributed a certain level of contamination to the Ohio River water and sediments before it reached the Site, some effects from the Site were found in both media. The effects were mainly in the form of elevated pH and concentrations of PAHs, PCBs, and cyanide. Storm water runoff and seep discharge were found to be the most likely transport mechanisms to the River.

6. Groundwater

Groundwater at the Site was found to be contaminated in excess of maximum contaminant levels (MCLs) for a number of contaminants, including tetrachloroethene (PCE), cyanide, fluoride, arsenic, antimony and beryllium. The primary source of the plume appeared to be infiltration of precipitation through the FSPSA.

C. Selected Remedy

The selected remedy, as documented in the September 12, 1994 ROD and the April 1, 1997 ESD, is as follows:

- Groundwater. Continued pumping of the reduction plant production well and the existing interceptor wells to maintain a capture zone for the contaminated groundwater and prevent contaminants from migrating to the Ohio River or to the rolling mill property. Treatment of interceptor well water to Ohio EPA National Pollutant Discharge Elimination System (NPDES) program standards before discharge to the Ohio River. The remedial goal for groundwater is restoration to drinking water quality standards throughout the plume. Groundwater will continue to be extracted and treated until the groundwater cleanup standards are attained.

- Leachate. Installation of trench drains to intercept and extract all leachate seeping from the CMSD. Treatment of the leachate to meet NPDES discharge limits.

- CMSD. Recontour and cover the CMSD with a dual-barrier cap that meets Subtitle C Resource Conservation Recovery Act (RCRA) requirements. Construct a Toxic Substance Control Act (TSCA) waste disposal cell within the CMSD for placement of soil with contamination greater than 50 ppm PCBs.

- Soils. In situ soil flushing treatment of residual soil contamination in the FSPSA. Flushed contaminants transfer to the groundwater, which is ultimately captured either by the downgradient interceptor well and treated or by the production well. The FSPSA was found in the RI to be the primary contributor of fluoride and cyanide contamination to the groundwater. The goal of the in situ soil flushing is to remove sufficient contaminants such that the soils no longer cause or contribute to unacceptable levels of contamination in the underlying and downgradient groundwater. Site-specific soil cleanup standards were to be developed via a soil model during remedial design; however, this task has not been completed. Treatment of the FSPSA soils by soil flushing will continue until the soil cleanup standards

are achieved and the groundwater cleanup standards are achieved at all compliance points in and downgradient of the FSPSA. Excavate and consolidate contaminated soils from the CRDA and the trench drains under the cover at the CMSD. Place soils with PCB levels at or above 50 ppm in the TSCA cell.

- Sediments. PCB- and PAH-contaminated sediments will be dredged from the Outfall 004 stream backwater area and placed in the on-site TSCA cell that is part of the CMSD landfill.

- Site-wide. Place restrictions on access and use of the Site. Access to the Site would be physically restricted by installation and maintenance of a 6-foot high chain link fence topped with 3 strands of barbed wire. Use restrictions include prohibition of on-site drinking water wells and residential construction.

The State of Ohio did not concur with the original ROD. Ohio EPA said that components of the ROD did not comply with applicable or relevant and appropriate State of Ohio environmental regulations. They also said that they had concerns regarding the effectiveness of the selected groundwater remedy.

The ROD only required certain institutional controls for the Site. This was changed with an Amendment to the Consent Decree, signed March 11, 2009, that required institutional controls for both the Site and the reduction plant property. These institutional controls have been recorded with the Monroe County, Ohio, Register of Deeds in an Environmental Covenant about April 16, 2010. The Environmental Covenant includes no use of groundwater except for industrial purposes, no interference with the operation and maintenance of the remedial action components, and no residential use, these applying to both the Site and the reduction plant property. It also includes certain restrictions on construction for the Site. This Environmental Covenant is an enforceable document and is necessary to provide long-term protectiveness.

III. Basis for this ESD

Following the submittal of Ormet's request to shut down the interceptor wells, EPA reviewed the supporting information provided by Ormet and additional groundwater flow data, pumping data and groundwater contour maps for the reduction plant production well and interceptor well to verify Ormet's contention that operation of the interceptor well (1) is not necessary to maintain hydraulic containment of the plume; (2) is not significantly contributing to achievement of the remedial objective; and (3) is, therefore, not cost effective. Secondly, EPA evaluated whether the remedy, as proposed to be modified, would continue to meet applicable or relevant and appropriate requirements as required by Section 121(d)(2) of CERCLA, 42 U.S.C. §9621(d)(2), and the NCP.

A. Demonstration of Plume Containment

The water level maps generated from monitoring well data collected over the last ten years clearly and consistently show a substantial cone of depression associated with pumping of the reduction plant production well and interceptor well.[1] The interceptor wells are located within 100 feet of the reduction plant production well and thus it is reasonable to treat the combined production and interceptor well flow system as a single pumping center. The combined pumping of the wells is clearly maintaining hydraulic capture of the groundwater plume. A comparison of groundwater contour maps prepared from 2003 through 2008 with contemporaneously collected pumping data shows that pumping at total rates from both wells of approximately 1 mgd (million gallons per day) has been sufficient to maintain hydraulic containment. During this same period there occurred certain instances in which the interceptor well was not pumping at all during the week the water levels were measured, showing that capture was achieved by

[1] The company operates only one interceptor well at a time. The second one is a backup.

the reduction plant production well pumping alone at those times. Review of six years of discharge rates of the wells confirms the minimal amount of discharge from the interceptor well(s) compared to the production well. Ormet states that the reduction plant production well has two pumps each rated at 1500 gpm that can operate at the same time or individually, as needed. Thus, the production well is capable of pumping rates in excess of 1 mgd and has sufficient capacity to maintain hydraulic containment absent operation of the interceptor well. The primary consideration for maintaining hydraulic capture is that the production well achieve and maintain a pumping rate of at least 1 mgd (independent of the production needs of the Ormet Plant).

B. Effect of Interceptor Well Pumping on Groundwater Remediation

The ROD remedy included soil flushing to accelerate leaching of fluoride and cyanide from soils in the FSPSA to groundwater, in order to reduce these contaminants to levels at which they no longer contribute to groundwater contamination. The flushing system is only operated during non-winter months, typically from April to October. The soil flushing became operational in 1999. Initially, the concentrations of cyanide and fluoride in the groundwater increased. The results from four wells located in a line immediately downgradient of the FSPSA were analyzed closely; each of these four wells was sampled three times per year. The concentrations of cyanide and fluoride in one of these wells had already reached the cleanup levels, so what follows is about the results for the other three wells. The concentrations reached a peak within a year or so after flushing began and then began to decrease. The concentrations do fluctuate; some of this may be due to the fact that flushing does not take place all year. In the three wells, between the times the peaks were reached and early 2010, the concentrations of total cyanide have dropped to between 5% and 25% of the peak concentrations and the concentrations of fluoride have dropped to between 40% and 55% of the peak concentrations. Trend lines were determined for both substances in each of the wells. For total cyanide, disregarding one of the wells whose fluctuations were greater than those of the others, the trend lines indicate that it will take 25 to 30 years from 2010 to reach cleanup levels at these wells[2]. For fluoride, the trend lines for the same two wells also indicate that it will take 25 to 30 years to reach cleanup levels here. The flushing of the FSPSA soils depends primarily upon the amount of water that can be applied to the area. The movement of the groundwater from the FSPSA is dependent upon the amount of water being removed from the groundwater in the area of the interceptor wells and the reduction plant production well. As discussed above, the interceptor well pumping rate is not significantly contributing to establishing and maintaining the hydraulic gradient. In addition, the concentration of cyanide in the groundwater has decreased significantly over time so that the amount being removed by the treatment system is not worth the cost.

C. The Remedy, as Modified by this ESD, Will Comply with Applicable or Relevant and Appropriate Requirements (ARARs) of the Clean Water Act.

The 1994 ROD identified as an ARAR the Clean Water Act's NPDES permitting requirements applicable to direct discharges of pollutants to surface water. It did so because the selected remedy involved extraction of groundwater containing Site contaminants and discharge of the extracted water to the Ohio River. Both the reduction plant production well and the interceptor wells pump groundwater that is discharged to the Ohio River. Ohio EPA established discharge limits in Ormet's NPDES permit to limit the concentrations of site-related pollutants in the plant's discharges to the River.

Water pumped from the reduction plant production well has been historically, and is currently, used for the plant's non-contact cooling water. The Superfund remedy incorporated the existing practice of pumping the reduction plant production well to capture groundwater contamination and maintain the

[2] This is a conservative estimate. Total cyanide was used for the analysis but the cleanup standard is the MCL, which is for cyanide amenable to chlorination, which is part of the total cyanide.

hydraulic gradient until the soil flushing component would remove the primary source of the groundwater contamination. The used non-contact cooling water, in combination with additional plant waste water streams identified in the permit, is then discharged to the River, primarily through Outfall 002. For Outfall 002, the discharge limitation for free cyanide concentration is 0.044 mg/l maximum and a loading of 0.11 kg/day; there is also a specification for pH for this stream. The samples are to be collected prior to discharge to the River.[3]

With respect to the interceptor wells and associated treatment system, Ohio EPA established internal effluent discharge limits for the treated water based on the treatment system's capabilities. These standards must be met in the effluent at the point it is discharged from the treatment unit. Cyanide and fluoride are the primary contaminants of concern in the water from the Superfund site; the treatment system does not provide treatment for fluoride. The treated water from the interceptor well treatment unit is then combined with non-contact cooling water from various plant processes and other waters to be discharged; the combined wastewater stream is discharged to the Ohio River through Outfall 002.

Ormet submitted data to demonstrate that if the interceptor well is shut down and all cyanide and fluoride mass previously captured by the pumping of the reduction plant production well and interceptor wells would then be captured by the production well alone, the concentrations of cyanide and fluoride in the production well water would still be below the cyanide limitations specified for the outfalls and the fluoride limit established for the discharge from the treatment plant for the interceptor stream. No fluoride limit is specified in the permit for the outfalls to the River.

For most of the time since groundwater monitoring has been conducted pursuant to the ROD, the interceptor wells have been operating, so Ormet calculated "composite" weak-acid dissociable cyanide (WAD-cyanide), total cyanide, and fluoride discharge concentrations based on the sums of the masses of WAD-cyanide, total cyanide, and fluoride extracted by the interceptor well and that measured in the water from the reduction plant production well. This calculation simulated what the concentrations of cyanide and fluoride would be in the production well if all of the cyanide and fluoride mass previously captured by the interceptor well would be drawn into the production well. During the period from October 2008 through the first week of November 2008, interceptor well pumping was stopped for maintenance of the treatment system. Groundwater produced by the production well was sampled and analyzed for WAD-cyanide, total cyanide, and fluoride. The measured concentrations of these parameters were typically lower than those predicted by Ormet's calculations of composite concentrations.

U.S. EPA notes that concentrations of site contaminants pumped by the reduction plant production well would be expected to be low even after receiving the water previously captured by the interceptor wells because the production well is located very near the River and pumping of the well draws in river water as well as groundwater.

It has been reported that during 2011, with an interceptor well operating, the water from the reduction plant production well has been meeting both NPDES and MCLs for cyanide and fluoride.

U.S. EPA also considered whether the shutdown of the interceptor wells could trigger applicability of the State's Antidegradation Rule, Ohio Administrative Code (OAC) 3745-1-05, and consulted with the Ohio

[3] The water-quality standard (WQS) for cyanide in the Ohio River, which is used for the NPDES effluent limitation, is based on "free" cyanide, which includes the cyanide ion (CN^-), hydrogen cyanide (HCN), and soluble cyanide salts (e.g., KCN, NaCN). Weak-acid dissociable cyanide (WAD-cyanide) includes all free cyanide species plus cyanide complexes that dissociate in weak acid. Thus WAD-cyanide is conservatively analogous to free cyanide; i.e., free cyanide concentrations may equal, but not exceed, WAD-cyanide concentrations. WAD-cyanide is a test method for free cyanide.

EPA Division of Drinking and Ground Waters in determining whether the rule is an applicable standard for this change in the remedy. This rule is required by the Clean Water Act to protect the existing uses of a water body. The rule establishes procedures to be followed if a project proposes to increase the discharge of a regulated pollutant above levels currently authorized through a permit. Although the proposed shutdown of the interceptor wells would not cause an exceedance of the limits in Ormet's NPDES permit for discharges containing reduction plant production well effluent at the outfalls, there would be some increase in the mass of fluoride and cyanide in the water discharged to the River

Ohio EPA determined that the interceptor well shutdown would not trigger the application of the State's antidegradation rule. Ohio EPA confirmed that its antidegradation rule would only be applicable if Ormet would be required to modify its permit to increase the existing authorized cyanide loadings. Since the increase of cyanide in the discharge resulting from the interceptor well shutdown will not exceed its currently authorized limits, Ormet would not be required to apply for a modification of the NPDES permit in order to shut down the interceptor wells.

U.S. EPA, as required by Section 121 of CERCLA, also concluded that the substantive requirements of the antidegradation rule are not relevant and appropriate. If an increase in the discharge of cyanide resulting from the shut down did cause the authorized loading to be exceeded and a permit modification were required, the antidegradation rule could require the increase to be controlled through best available demonstrated control technology. However, shutdown of the interceptor wells will introduce only a small additional loading of cyanide to the Ohio River water, and the current loading is greatly below the authorized loading. Data provided by Ormet with its shutdown request showed the WAD-cyanide mass daily loadings (kg/day) at Outfalls 002 and 004 from August through December, 2008. The reported results for the one-month period of interceptor well shutdown during this period show no discernable difference to the results reported prior to shutdown. More significantly, mass loadings during the entire five month period ranged from a maximum of 0.0200 kg/day and an average of 0.0081 kg/day at Outfall 002 and a maximum of 0.0141 kg/day and an average of 0.0069 kg/day at Outfall 004. Under the present NPDES permit most of these two streams will flow through Outfall 002 where the loading limitation is 0.11 kg/day of free cyanide; WAD-cyanide is a conservative measure of free cyanide. Requiring additional treatment due to a small increase would not be cost effective or necessary to protect the River.

D. Other Chemicals of Concern

A number of the monitoring wells have been designated as compliance wells. These wells are sampled at each of the three sampling events per year. Most of these compliance wells are within and downgradient or approximately downgradient of the FSPSA. The following provides a summary of the status of these other chemicals of concern.

Arsenic concentrations in three of the compliance wells have consistently been below the cleanup goal of 10 µg/ l, which happens to be the current MCL, since 1997, and in two others the concentrations have typically been below the cleanup goal since 2006. Data for five other wells show a general trend of decreasing concentrations and one well exhibits no consistent trend. In two wells, arsenic concentrations increased relative to historical values, possibly as a result of the soil flushing, but in recent years have shown a downward trend. The present cleanup goal was selected as an approximate measure of the background level and is subject to a future change.

Beryllium concentrations have generally been below the cleanup level, as have vanadium concentrations. Tetrachloroethene (PCE) is analyzed for in the five wells where it was detected during the RI. It is above the cleanup level in three of the wells, which have shown increases; in two of them the increases are to a lesser degree. All three wells appear to have stabilized.

The secondary maximum contaminant level (SMCL) for manganese is 50 µg/1 and the tentative cleanup level set in the ROD is 230 µg/1, which was identified as a background value during the RI; this cleanup level is subject to change and will be reviewed since the groundwater in the area can naturally be above this level. Recently, the manganese levels in three of the compliance wells have been below the cleanup level. In nine of the compliance wells, the increased manganese concentrations that roughly coincided with the soil flushing appear to have peaked and are showing a downward trend.

IV. Description of Significant Differences to the ROD Remedial Action

The ground water remedy selected in the September 1994 ROD is modified to allow pumping of the interceptor wells and operation of the associated treatment unit to be discontinued. However, the interceptor wells and treatment system must be maintained in a condition that would allow for resumption of operation if monitoring data subsequent to the interceptor well shutdown indicate that 1) effluent containing water pumped from the reduction plant production well which is discharged to the Ohio River exceeds applicable effluent limits in Ormet's National Pollutant Discharge Elimination System (NPDES) permit; and/or 2) hydraulic containment of the groundwater plume emanating from the Superfund Site is not being maintained by pumping of the production well alone. The interceptor wells and treatment system can be removed in the future if it can be demonstrated that they are not likely to be needed. In addition, the remedy is modified to require a minimum pumping rate for the production well of 1 mgd (million gallons per day) to ensure that hydraulic capture of the groundwater plume is maintained. This minimum pumping rate can be lowered if Ormet demonstrates that containment can be maintained with a lower rate.

The 1994 ROD, as amended by the 1997 ESD, required capture and containment of the plume using the co-located reduction plant production well and interceptor well (with treatment) combination. The only change that is being made to the remedy selected by the 1994 ROD and the 1997 ESD is the elimination of a part of the extraction system that is no longer needed. This is not a fundamental change in the remedy in that the plume will be contained by the reduction plant production well located at the same capture point; the extraction of part of the contaminated plume when the interceptor wells were installed was done to remove other contaminants that were causing fouling in the non-contact cooling water system and was not a necessary treatment element to reach the remedial action objective. Although the change may extend the time it will take to achieve the remedial action objective of groundwater restoration by a few years, it is expected that this additional time will still allow the remedial objective to be reached in a commensurate time frame.

V. State Comments

U.S. EPA asked Ohio EPA to review the request from Ormet to terminate the use of the existing interceptor wells associated with the plant's groundwater remediation system. Ohio EPA responded that, in general, it was opposed to the request. Ohio EPA has recommended to U.S. EPA on several occasions in the past that groundwater remediation efforts be increased by using an interceptor well closer to the FSPSA source area. Ohio EPA again is recommending that this be done in place of discontinuing the use of the current interceptor well, believing that continuing to extract and treat cyanide contamination would speed up the cleanup and that a well closer to the FSPSA could be more effective than the current interceptor well. An alternative that would have placed extraction wells closer to the source area was considered for the 1994 ROD but was not selected because it was expected to remediate the groundwater within similar timeframes as those estimated for the selected remedy. After evaluating Ohio EPA's recommendation, U.S. EPA has reached the same conclusion again, that installing and operating a new interceptor well closer to the FSPSA will not expedite cleanup enough to justify the additional costs.

In support of its request, Ohio EPA modeled the aquifer flow under several scenarios, using reduction plant production well flow rates of 1 mgd or higher and three different interceptor well locations: 1) the present location; 2) an interceptor well near monitoring well MW-2, which is about 800 feet downgradient from the FSPSA area (about 1900 feet closer to the FSPSA area than the present location); and 3) no interceptor well. The interceptor well flow rate was 0.1 mgd. According to Ohio EPA's model, the times to reach the groundwater cleanup concentration for free cyanide were, for the three interceptor well locations: 1) 21 years; 2) 14 years; and 3) 25 years. The placement of an interceptor well closer to the spray field might not have as great an effect as these numbers might indicate, however, because Ohio EPA's model was not able to incorporate the flow of additional contamination into the groundwater from the soils in the spray field. The interceptor well location would not affect the rate of removal of the contaminants from the soils above the groundwater in the FSPSA area. The cleanup times would be greater, and the relative time differences smaller, due to this additional source.

Cleanup times have also been estimated by Ormet's contractor from the rate of decrease in concentrations over the past few years at two wells on the downgradient side of the spray field area. This data includes the effects of the interceptor well operation and the additional contamination entering the aquifer below the spray field. The cleanup times estimated are in the 25 to 30 year range.

Experience with the current interceptor well indicates that the effectiveness of the cyanide treatment for the present location may be limited. The effectiveness of the treatment system with the current well has decreased because the cyanide levels in the water entering the system are now low. But the treatment system also has limitations when cyanide levels are too high.

After considering the state's comments, U.S. EPA has decided to proceed with eliminating the present interceptor well and not installing a new one closer to the spray field. The operation of any interceptor well with a treatment system does not appear to be cost effective, especially with the uncertainties associated with the modeling that has been done. This is especially true because no one is drinking the contaminated groundwater and because the water from the reduction plant production well meets all discharge standards.

VI. Statutory Determinations

The modified remedy satisfies the requirements of Section 121 of CERCLA, 42 U.S.C. §9621. The remedy is protective of human health and the environment, and meets all applicable or relevant and appropriate environmental requirements by providing for continued flushing of FSPSA soil; capture of the downgradient contaminated groundwater plume with the reduction plant production well; discharge of collected water in compliance with NPDES discharge limits; and continued groundwater monitoring. The modified remedy includes discontinuation of operation of the interceptor wells and associated treatment unit. The modified remedy is cost-effective because the costs are proportional to its overall effectiveness. The statutory preference for treatment as a principal element is not satisfied because the remaining site contamination is at low concentration that does not lend itself to treatment. Accordingly, permanent solutions and alternative treatment technologies are used to the maximum extent practicable.

Since hazardous waste will continue to remain on site at levels that do not allow for unrestricted use and unlimited exposure, five-year reviews of the Site remedy will continue to be required. The modification to the remedy does not require any new institutional controls.

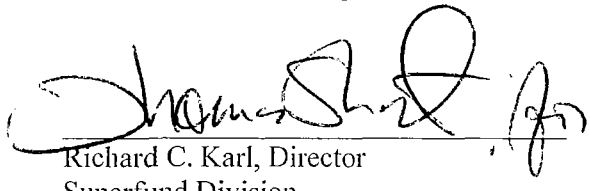
VII. Public Participation Compliance

U.S. EPA shall publish a notice of availability and a brief description of this ESD in a local newspaper as required by NCP §300.435(c)(2)(i)(B). This ESD shall also be placed on the public website

www.epa.gov/region5superfund/hub_state_ohio.html, in the Administrative Record files and information repository located at the Monroe County Public Library, and in the U.S. EPA office as required by NCP §300.435(c)(2)(i)(A). See paragraph F of section I of this ESD for further information about the information repositories.

VII. Declaration by U.S. EPA

U.S. EPA has determined that the modification to the Ormet Corp. site groundwater remedy selected in the 1994 ROD that is documented in this ESD is significant but does not fundamentally alter the overall Site remedial action with respect to scope, performance or cost. I therefore approve the issuance of this ESD for the Ormet Corp. site and the change to the remedial action stated herein.



Richard C. Karl, Director
Superfund Division
U.S. EPA Region 5

3/20/12
Date

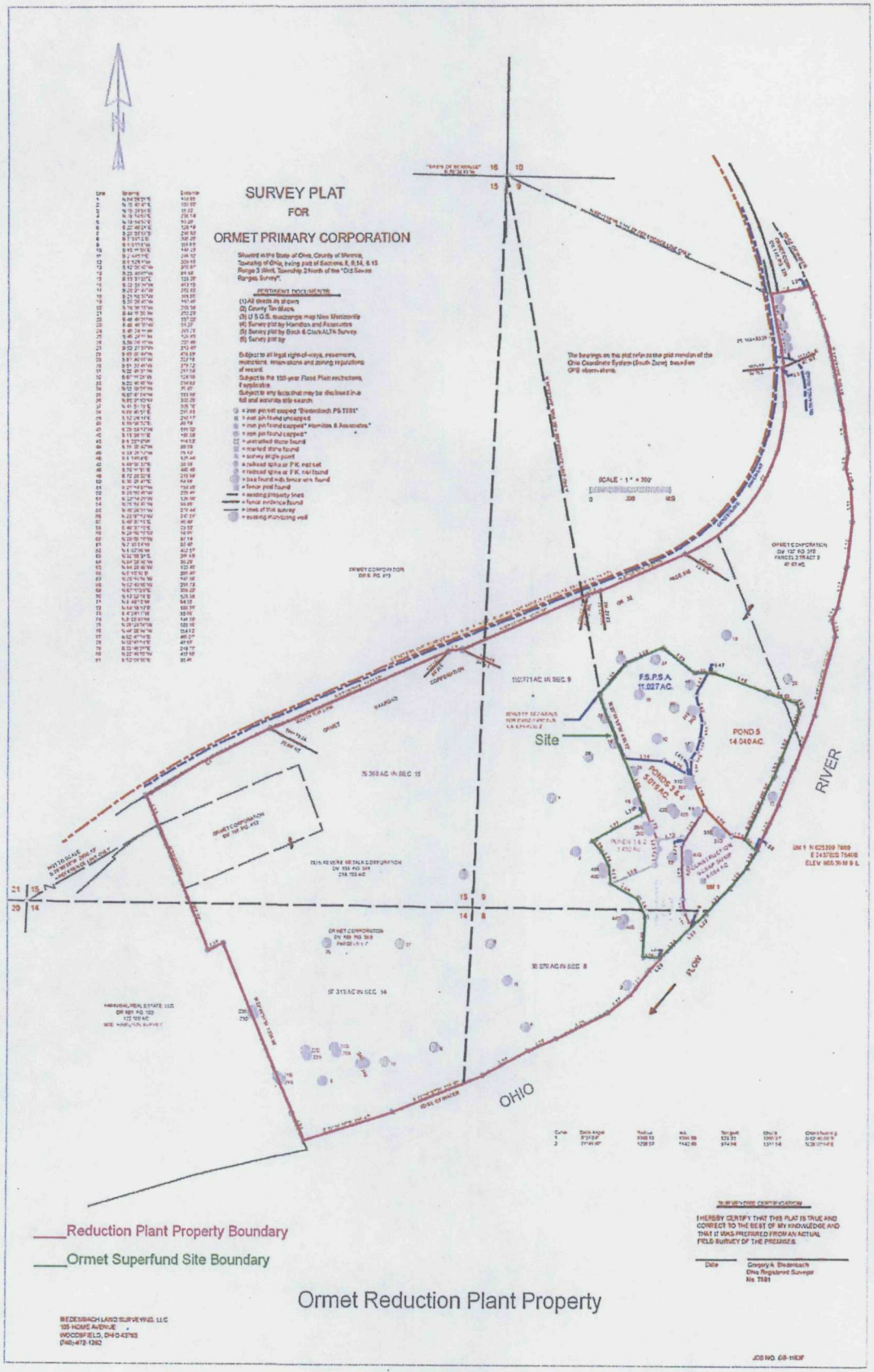
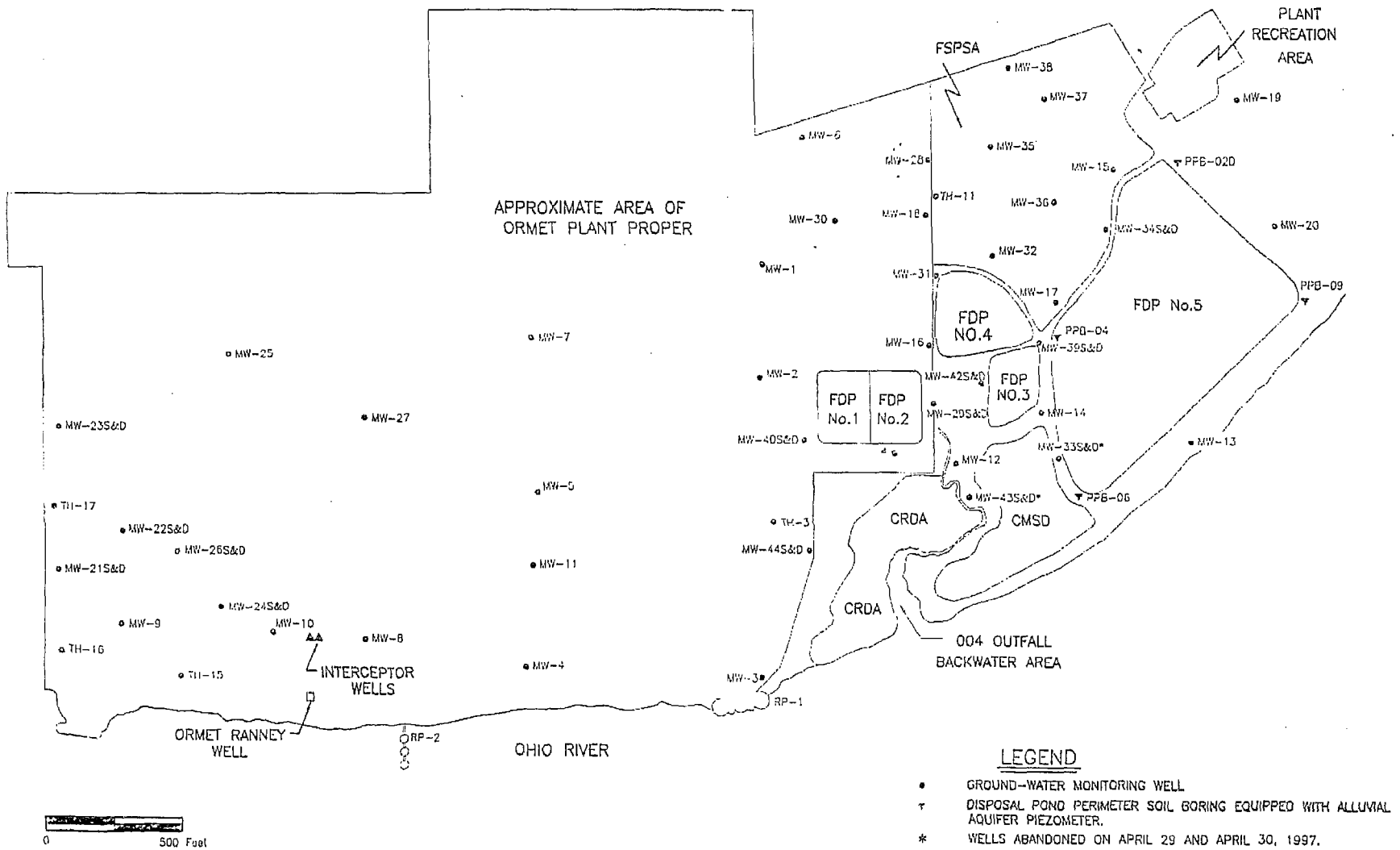

SURVEY PLAT
FOR
ORMET PRIMARY CORPORATION
Site
F.S.P.S.A.
11.027AC.
POND 5
14.040AC.
RIVER
OHIO
FLOW
Reduction Plant Property Boundary
Ormet Superfund Site Boundary
Ormet Reduction Plant Property

Figure 1


PLANT
RECREATION
AREA
FSPSA
APPROXIMATE AREA OF
ORMET PLANT PROPER
FDP
NO.4
FDP No.5
FDP
No.1
FDP
No.2
FDP
NO.3
CRDA
CMSD
CRDA
004 OUTFALL
BACKWATER AREA
INTERCEPTOR
WELLS
ORMET RANNEY
WELL
OHIO RIVER
MW-38
MW-37
MW-19
MW-35
MW-28
MW-15
PPB-02D
TH-11
MW-36
MW-18
MW-30
MW-34S&D
MW-20
MW-32
MW-1
MW-31
MW-17
PPB-09
MW-7
MW-16
PPB-04
MW-39S&D
MW-25
MW-2
MW-42S&D
MW-27
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MW-29S&D
MW-14
MW-40S&D
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MW-13
MW-12
MW-5
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PPB-06
TH-17
TH-3
MW-22S&D
MW-44S&D
MW-26S&D
MW-21S&D
MW-11
MW-24S&D
MW-9
MW-10
MW-8
TH-16
TH-15
MW-4
MW-3
RP-1
RP-2
0
500 Feet
LEGEND
GROUND-WATER MONITORING WELL
DISPOSAL POND PERIMETER SOIL BORING EQUIPPED WITH ALLUVIAL AQUIFER PIEZOMETER.
WELLS ABANDONED ON APRIL 29 AND APRIL 30, 1997.

Figure 2